



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,272	09/10/2003	Jin-Hee Kim	1567.1054	4031
49455	7590	02/20/2007	EXAMINER	
STEIN, MCEWEN & BUI, LLP 1400 EYE STREET, NW SUITE 300 WASHINGTON, DC 20005			WEINER, LAURA S	
			ART UNIT	PAPER NUMBER
			1745	
SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE		
3 MONTHS	02/20/2007	PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/658,272	KIM ET AL.	
	Examiner Laura S. Weiner	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 26 December 2006.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) 13-20 and 22-48 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-12, 21 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)	5) <input type="checkbox"/> Notice of Informal Patent Application
Paper No(s)/Mail Date. _____	6) <input type="checkbox"/> Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments and certified translation of Foreign Priority document, filed 12-26-06, with respect to the rejection(s) of claim(s) 1-12, 21 under 35 U.S.C. 102(e) as being anticipated by Noh et al. (US 2004/0197667) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Shen et al. (5,030,528)

Election/Restrictions

2. Applicant's election with traverse of Group I, claims 1-20 in the reply filed on 8-18-06 is acknowledged. The election of species of additive of Formula (1), (bisphenol A) where R1 and R2 are hydroxyl groups and R3, R3 are methyl groups is acknowledged. Group II, claim 21 has also been examined. The elected species of an additive being bisphenol A has been found allowable and an additive comprising a compound of Formula (1) has been found allowable. The next species searched was 2-methylfuran (Formula (2)).

3. Claims 13-20, 22-48 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention and species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 8-18-06.

Claim Rejections - 35 USC § 102

4. Claims 1, 3-6, 8-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Shen et al. (5,030,528).

Shen et al. teaches in columns 6-8, an electrolyte comprising a nonaqueous solvent comprising a mixture of 2-methyltetrahydrofuran, 5-30 volume percent ethylene carbonate, 0.01-0.1 weight percent ethylene propylene diene terpolymer and 0.2-2 percent 2-methylfuran and a conductive solute comprising 1-1.8 M lithium arsenic hexafluoride (LiAsF₆).

5. Claims 1, 3-6, 8-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Sekino et al. (6,787,269).

Sekino et al. teaches in column 29-30, Table 10, Example 42, an electrolyte comprising EC, BL and 0.5 wt% 2-Me-F comprising 1.5M LiBF₄ and 0.2M LiN(C₂F₅SO₂)₂.

Claim Rejections - 35 USC § 103

6. Claim 7 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Shen et al. (5,030,528) or Sekino et al. (6,787,269).

Shen et al. teaches in columns 6-8, an electrolyte comprising a nonaqueous solvent comprising a mixture of 2-methyltetrahydrofuran, 5-30 volume percent ethylene carbonate, 0.01-0.1 weight percent ethylene propylene diene terpolymer and 0.2-2

percent 2-methylfuran and a conductive solute comprising 1-1.8 M lithium arsenic hexafluoride (LiAsF₆).

Sekino et al. teaches in column 29-30, Table 10, Example 42, an electrolyte comprising EC, BL and 0.5 wt% 2-Me-F comprising 1.5M LiBF₄ and 0.2M LiN(C₂F₅SO₂)₂.

Since Shen et al. or Sekino et al. teaches the same electrolyte comprising a lithium salt, an organic solvent and a 2-methylfuran additive then inherently the additive forms a passivation layer on the surface of the positive electrode must also be obtained.

In addition, the presently claimed property of the additive forms a passivation layer on the surface of the positive electrode would have obviously have been present once the Shen et al. or Sekino et al. product is provided. *In re Best*, 195 USPQ 433 (CCPA 1977).

7. Claims 2 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shen et al. (5,030,528).

Shen et al. teaches in columns 6-8, an electrolyte comprising a nonaqueous solvent comprising a mixture of 2-methyltetrahydrofuran, 5-30 volume percent ethylene carbonate, 0.01-0.1 weight percent ethylene propylene diene terpolymer and 0.2-2 percent 2-methylfuran and a conductive solute comprising 1-1.8 M lithium arsenic hexafluoride (LiAsF₆).

Shen et al. discloses the claimed invention except for specifically teaching that 2,5-dimethylfuran is the additive compound.

Ohsawa et al. (5,223,353) teaches in column 15, lines 35-55, that the composition is extremely important from the view point of the improvement of the charge-discharge efficiency and the extension of battery cycle life. Additives such as 2-methylfuran, 2,5-dimethylfuran, etc. can be employed. Ohsawa et al. teaches in column 14, that anions for the electrolyte can be AsF₆⁻, etc.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use 2,5-dimethylfuran instead of 2-methylfuran because Ohsawa et al. teaches that both these additives can be used in the electrolyte as explained above and one would expect therefore that these binder materials would function in a similar way and give similar results.

8. Claims 1, 3-6, 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suemori et al. (JP 7-192756, abstract).

Suemori et al. teaches an electrolyte comprising LiPF₆, LiAsF₆, etc. in a solvent selected from the group consisting of EC, PC, BC, VC; dimethyl carbonate, diethyl carbonate, ethylmethyl carbonate, etc. and 0.5-30 wt% furan.

Suemori et al. teaches the claimed invention except does not specifically teach that EC or PC or BC or VC and dimethyl carbonate or diethyl carbonate or ethylmethyl carbonate and the furan are present in the electrolyte.

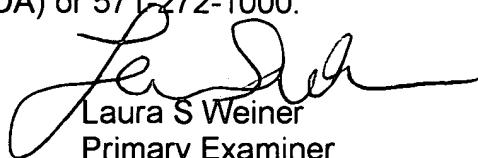
It would have been obvious to one having ordinary skill in the art at the time the invention was made to use both solvents a cyclic carbonate EC, PC, BC or VC and a linear carbonate dimethyl carbonate, diethyl carbonate or ethylmethyl carbonate in

addition to the furan in the electrolyte taught by Suemori et al. because it is *prima facie* obvious to combine two compositions each of which is taught by prior art to be useful for the same purpose in order to form a third composition that is to be used for the very same purpose. See *In re Kerkhoven*, 205 USPQ 1069; *In re Susi*, 169 USPQ 423.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura S. Weiner whose telephone number is 571-272-1294. The examiner can normally be reached on M-F (6:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Laura S Weiner
Primary Examiner
Art Unit 1745

February 15, 2007